

generation of misleading error messages. These anticompetitive actions are described in detail in the testimony that follows.

A TECHNOLOGY OVERVIEW OF QUICKTIME

57. QuickTime includes a special set of application program interfaces. As discussed above in paragraph 9, an API allows an application to "talk to" the operating system. QuickTime APIs enable software application program developers to manipulate data in a QuickTime file that can in turn interact directly with the computer operating system.

58. In order to draw upon QuickTime's capabilities, a consumer needs not only the QuickTime APIs, but also a QuickTime "viewer" or "player." This player can be a "plug-in" to a consumer's browser which enables the consumer to run QuickTime movies and other content from within the browser. When used as a plug-in, the QuickTime player extends the Internet browser's functionality by enabling it to integrate the multimedia capabilities that QuickTime makes possible. This has the effect of extending the Internet browser's architecture to include the QuickTime functionality.

59. Because we have created QuickTime for both Windows and Macintosh computers, developers can create a single version of a content product that will run on both Macintosh and Windows, without the additional expense of "porting" the product to different operating systems. This is referred to in the industry as "cross-platform" capability. QuickTime is currently the most popular multimedia technology used by creators of multimedia content for computers, in part because of this capability. This feature of QuickTime is illustrated in Attachment 3.

60. Three other aspects of QuickTime are relevant to the storage and transmission of multimedia content: (1) the "file format" in which data for multimedia

content is kept, (2) the communications "protocols" used to transmit the data between computers, and (3) the compression/decompression algorithms, or "codecs" that are used to reduce the amount of data that must be transmitted.

61. File format. A file is a container for data; a file format is a method for organizing the data in the container. QuickTime specifies its own file format which is known as a QuickTime Movie file. QuickTime Movie files are capable of storing many types of multimedia content such as audio, video and 3D images. The QuickTime file format is highly flexible and may be adapted to meet the requirements of future types of multimedia content.

62. Protocols. To communicate over a network, such as the Internet, computers must follow the same conventions for transmitting data. These conventions are referred to as protocols. For example, Web browsers request and retrieve Web pages from Web "servers," i.e., computers that provide information or, in some cases, processing services to other "client" computers in the network. In order to transmit and receive such data, the Web browser uses a standard and widely-used, public Internet protocol known as "HTTP" for Hypertext Transfer Protocol.

63. Apple's QuickTime technology does not require any particular protocols other than HTTP for the transmission of QuickTime files. This fact has important operational consequences. It means that any server on the Worldwide Web is capable of transmitting a QuickTime file to a desktop computer or Internet device client via the Internet. Because QuickTime files are fully compatible with HTTP, no proprietary or specialized server software is needed to transmit or receive QuickTime files.

64. Compression technologies. At its most fundamental level, data is transmitted between computers as a stream of 1's and 0's called bits. Computer programmers use compression algorithms to compress that data and thereby make its transmission more efficient; decompression algorithms restore the compressed data to its original format. These compression and decompression algorithms are referred to as codecs.

65. The QuickTime software incorporates about a dozen different codecs. A Web site developer who uses QuickTime-based tools for content creation can choose which of these codecs to utilize for each file. In addition, QuickTime allows the developer to incorporate codecs of their own or to use no codecs at all.

66. Despite the data compression that codecs provide, it can still take several minutes, possibly even hours, to transmit large multimedia files such as movies across the Internet. In the past, a user would have to wait for the entire file to be transferred before the player would start to play back the movie or audio clip. To mitigate this delay, QuickTime uses a process called "streaming," which begins playback of the multimedia content after a portion of the file has been received but before the entire file is transferred. Thus, the user will only experience a delay of a few seconds to begin playback. Transmission of the remainder of the file occurs in parallel with playback.

67. The QuickTime architecture is "extensible," meaning that other vendors can add functionality without Apple's knowledge or permission. Because QuickTime's APIs are fully documented and publicly known, enterprising ISVs can develop programs that extend QuickTime's capabilities in ways that tap into special features in their applications. For example, a developer can take the source code to the Netscape

browser and incorporate new features that take advantage of QuickTime's APIs, in the same way that CD-ROM developers have created customized players to take advantage of new or special features that they then incorporate into their applications or games.

68. QuickTime's extensibility, power and open architecture afford it significant advantages over alternative products. By contrast, Microsoft's strategy has been to develop competing multimedia products based on a closed, less functional, less extensible approach. One would expect that Quicktime's flexibility and technical merits would prevail against Microsoft's approach in a competitive market. Microsoft, however, appears determined to dominate the multimedia market not through the quality of its products, but by leveraging its operating system monopoly to gain control over both the client and the server sides of multimedia technology.

**MICROSOFT HAS DESIGNED ITS MULTIMEDIA PRODUCT TO EXCLUDE
COMPETITORS AND EXTEND ITS MONOPOLY POWER**

69. Microsoft's multimedia technology includes both a set of APIs and a media player which, to my knowledge, are now referred to as DirectX and Windows Media Player, although they have undergone several name changes. Microsoft also offers a server-side component in a product called NetShow that provides multimedia files to Web browsers.

70. Microsoft's approach to the multimedia market is similar to the strategy it has pursued in the browser market with Internet Explorer. Microsoft "gives away" multimedia technologies such as DirectX and Windows Media Player by bundling them with the Windows operating systems. As it did in the browser market, Microsoft intends to establish an installed base of its multimedia products that will predominate in the market. Microsoft expects its resulting monopoly will guarantee that consumers will

necessarily purchase and use other related Microsoft software products designed to operate solely on the Windows operating system.

71. As noted above, Apple's QuickTime technology uses standard Internet communication protocols for the transmission of files during playback of Internet multimedia content with the use of Apple's streaming technology. By contrast, the streaming capability in any network using Microsoft's multimedia products must use Microsoft's proprietary and undocumented communication protocols for streaming. Because Microsoft does not divulge those proprietary protocols, Apple's QuickTime movie player on a desktop computer cannot be configured to view a NetShow movie.

72. Microsoft's proprietary protocols require the use of Microsoft's operating system and multimedia software for both the server (NetShow) and the client (Windows Media Player) for streaming. With Microsoft's multimedia products, one cannot use a Web server from one of Microsoft's competitors, such as Apache, Netscape, or Sun, for streaming with Microsoft products; it is necessary to have a Microsoft Net Show server running on Microsoft's Windows NT operating system.

73. Microsoft seeks to impose its proprietary format on the market, actively opposing efforts to designate QuickTime as the basis for a standard format for certain multimedia data. Oracle, Apple, IBM, Netscape, Silicon Graphics and Sun Microsystems jointly proposed QuickTime to the International Standards Organization ("ISO") as the developmental starting point for the MPEG-4 multimedia storage specification.¹² The ISO adopted the proposal in 1998 despite vigorous opposition from Microsoft.

¹²"MPEG," an acronym for the Moving Picture Experts Group, is the name of a family of standards used for coding multimedia information (e.g., movies, video, and music) into a digital compressed format. MPEG-4 is one of the standards in this group.

74. The ISO's selection of QuickTime as the MPEG-4 standard reflects three major considerations. First, the QuickTime file format has been publicly documented since 1991 and its extensibility features are well-demonstrated. Second, the QuickTime format has been widely used for the storage of multimedia files. Third, the QuickTime file format supports a broad range of media types, including video, sound, graphics, animation, text, music and virtual reality.¹³

**MICROSOFT HAS USED ITS MONOPOLY POWER AND ANTICOMPETTIVE
TACTICS TO TRY TO DEFEAT QUICKTIME**

75. The widespread popularity and use of QuickTime pose a significant threat to Microsoft. The cross-platform capability of QuickTime holds the promise of weakening the symbiotic relationship between the operating system and application programs that is the foundation of Microsoft's monopoly position and that poses such a substantial barrier to competition in the operating systems market.

76. Microsoft appears to have fashioned a two-track strategy against QuickTime. Microsoft has repeatedly pressured Apple to cede the multimedia playback market to Microsoft. At the same time, Microsoft has pursued several actions to impede the growth of QuickTime and gain dominance over the multimedia market. As detailed below, Microsoft has written steps into its operating system to ensure that a QuickTime file will not operate reliably on Windows. Microsoft has also caused misleading error messages to appear that trick the user into believing that QuickTime technology is part of the problem actually caused by the Windows operating system. Finally, Microsoft has employed threats and exclusionary practices against third parties, compelling them to refuse to deal with QuickTime.

¹³See ISO Adopts QuickTime File Format as Starting Point for Developing new Component of MPEG-4 Specification.

**MICROSOFT REPEATEDLY PRESSURED APPLE TO GIVE UP QUICKTIME AND
CEDE THE MULTIMEDIA PLAYBACK MARKET TO MICROSOFT**

77. As recounted in the sworn deposition testimony of Phil Schiller and Tim Schaaff, Microsoft repeatedly pressured Apple to abandon its business of providing software that enables users to view multimedia content on their computers. In return, Microsoft offered Apple the much smaller portion of the market for software tools used to create multimedia content. Microsoft made it clear that if Apple refused to relinquish the playback market, Microsoft would use its monopoly power to drive Apple out of the entire multimedia market.

The April 1997 Meeting

78. In April 1997, a meeting took place at Apple between Tim Schaaff and Peter Hoddie of Apple, and Eric Engstrom, the manager of Microsoft's multimedia technology and Christopher Phillips, the business development manager for its multimedia API's, DirectX. Microsoft ostensibly initiated the meeting to discuss cross licensing codecs. Microsoft's true purpose was later revealed when Mr. Engstrom and Mr. Phillips stated that Microsoft wanted to take over the playback market. Mr. Phillips and Mr. Engstrom suggested that Apple cede the playback market to Microsoft and focus solely on the "authoring" area of multimedia, i.e., the development of software tools used to create multimedia content. (Schaaff Depo., pp. 33-38, 282-86)¹⁴; (TX:888)

79. Apple declined Microsoft's proposal to carve up the market by having Apple relinquish its media player. (TX:1045) Apple's engineers could see no reason for

¹⁴All citations to deposition testimony are referenced by the last name of the deponent and the relevant page number(s). The deposition of Tim Schaaff was taken on August 28, 1998. The deposition of Phil Schiller was taken on September 11, 1998.

Apple to abandon its highly popular QuickTime player technology and use what they felt was an inadequate and less capable Microsoft media player.

Meetings in August, September and October, 1997

80. In August 1997, Messrs. Hoddie, Schaaff, Engstrom and Phillips again met to discuss codecs. The Microsoft representatives again used the meeting to urge Apple to withdraw from the market for multimedia playback capability. (Schaaff Depo., pp. 55-58)

81. In September 1997, Microsoft hosted a meeting at the Fairmont Hotel in San Jose to unveil its new Advanced Streaming Format ("ASF") used in Microsoft's new media player. Mr. Engstrom from Microsoft and Mr. Schaaff from Apple were present at the meeting. (Schaaff Depo., p. 58)

82. At this event, Mr. Engstrom again urged Apple to focus on the authoring segment and to cede the playback business to Microsoft. Mr. Engstrom warned that if Apple refused, Microsoft would take over the authoring segment of the market. Mr. Engstrom stated that, if necessary, Microsoft would assign 150 engineers to an authoring development project in order to displace Apple from that market. At that time, Apple's entire QuickTime engineering group only consisted of approximately 100 engineers. (Schaaff Depo., pp. 58-62)

83. Mr. Engstrom noted at the meeting that Microsoft's Bill Gates was not interested in an authoring program because the market for this product was too small. He assured the Apple representatives, however, that if Microsoft needed to make an investment in providing authoring tools in order to push Apple out of the playback market, then Microsoft would devote all the necessary resources to accomplish this goal. (Schaaff Depo. pp. 60-61)

84. At Microsoft's request, another meeting was held at Apple on October 17, 1997, ostensibly to discuss codecs. Microsoft again used that meeting as an opportunity to press Apple to cede the playback market to Microsoft. Microsoft would allow Apple to continue with QuickTime playback for the Mac operating system, but would require Apple to relinquish the QuickTime playback capability in Windows. (Schaaff Depo., pp. 62-71)

Continued Threats From Microsoft

85. Throughout the events described above, Apple engineers kept me informed of the pressure Microsoft was exerting as well as the problems they were having in getting the QuickTime plug-in to work with Internet Explorer 4.0. Mr. Schaaff and Mr. Hoddie told me that Microsoft had demanded that Apple leave the playback market. Specifically, they related to me the Microsoft engineers' position that, without an agreement that would cede the playback market to Microsoft, Microsoft would "kill" Apple in the media playback market.

86. Microsoft's statements were of great concern to me. The problems that we were experiencing in running QuickTime on Windows with Internet Explorer 4.0 -- problems that had not existed with earlier versions of Internet Explorer -- suggested that Microsoft would use its control of Windows to harm QuickTime. I was particularly concerned about Microsoft's bundling of its multimedia technology with its Internet Explorer for the Mac OS. This would give Microsoft access to the Mac OS operating system while, at the same time, Microsoft was seeking to exclude Apple's multimedia technology from Windows.

87. As a result of these concerns, I updated Steve Jobs, the interim CEO of Apple, about the situation. On February 3, 1998, Mr. Jobs sent an electronic mail

message to Mr. Gates expressing Apple's concerns about the threatening behavior of Microsoft's employees. (TX:904)

88. On February 13, 1998, I had a lunch meeting in Cupertino with Don Bradford of Microsoft. The purpose of this meeting was to discuss the problems described in Mr. Jobs' message to Mr. Gates.

89. At this meeting, Mr. Bradford conveyed the same proposal that Microsoft had presented in the past. Specifically, if Apple would abandon the playback segment of the business, Microsoft would be willing to endorse QuickTime as the solution for the authoring portion. Mr. Bradford told me that Mr. Gates thought that this would be a way to resolve our dispute.

90. In early-April 1998, Microsoft communicated the same proposal once again. Mr. Jobs at Apple received a phone message from Mr. Engstrom of Microsoft, stating that Microsoft was developing a new file format called Advanced Authoring Format ("AAF") for its media technology and would like Apple to participate in that project. Mr. Jobs forwarded the message to Mr. Schiller and asked him to get a better idea of what Microsoft was proposing. (Schiller Depo., pp. 51-57)

91. Mr. Schiller telephoned Mr. Engstrom to discuss the proposal. (Schiller Depo., pp. 51-57) After a conversation about ways in which the two companies could work together in the multimedia market, Mr. Engstrom changed his tone. "I don't want you to misunderstand," Mr. Engstrom bluntly warned Mr. Schiller. "We're going to compete fiercely on multimedia playback, and we won't let anybody have playback in Windows. We consider that part of the operating system, so you're going to have to give up multimedia playback on Windows." (Schiller Depo., p. 55)

92. Surprised, Mr. Schiller asked, "So we have to give up playback on Windows to work together on authoring?" Mr. Engstrom answered, "Yes, we would work together on authoring. You guys have done a great job there, but you have to give up playback on Windows." (Schiller Depo., p. 56)

June 15, 1998 Meeting

93. At Microsoft's request, a meeting was held at the Apple campus on June 15, 1998, between Messrs. Engstrom, Phillips and Pierry of Microsoft and Messrs. Schiller, Schaaff, Tevanian, Hoddie and Jobs of Apple. The purpose of the meeting was to discuss ways that Apple and Microsoft might work together in the multimedia business. The agenda for this meeting is documented in Trial Exhibit 904. (Schiller Depo., p. 59)

94. At this meeting, Microsoft proposed a convergence between Apple's QuickTime and Microsoft's DirectX technologies. Microsoft's basic proposal was that Microsoft would take over the playback market for Windows, while allowing Apple to control the much smaller playback business for Macintosh. (Schiller Depo., pp. 59-60)

95. Microsoft's proposal, the substance of which is contained in documents marked as Trial Exhibit 912, entitled QuickTime/DirectX Convergence Proposal, includes the following provisions: (1) the parties would cross-license their codecs to each other and collaborate on all future codecs, (2) Apple must adopt Microsoft's inferior DirectX run-time platform for Windows, (3) Apple must adopt Microsoft's inferior, proprietary streaming technology, and (4) Apple must adopt Microsoft's new, inferior AAF file format for authoring.

96. Microsoft's proposal amounted to a forced abandonment of one of Apple's most successful and innovative products (and the programmers and customers

who had relied on it). Accordingly, Steve Jobs told Microsoft that Apple had no interest in giving up QuickTime. Microsoft's response conveyed a simple message: Microsoft would drive Apple out of the multimedia business.

**TO THWART QUICKTIME, MICROSOFT EMPLOYED
PUNITIVE AND EXCLUSIONARY ACTIONS**

97. While Microsoft was pressing Apple to withdraw from the playback market, Microsoft took several steps to sabotage QuickTime. These included creating misleading error messages and introducing technical bypasses that deprived QuickTime of the opportunity to process certain types of multimedia files. In some instances users were left with the false impression that QuickTime was not functioning properly when, in reality, Microsoft never allowed QuickTime the chance.

98. Apple has experienced technical issues with each new version of Microsoft's Internet Explorer, the Windows operating system and Microsoft's multimedia software. Most recently, the challenges that Apple has faced have revolved around providing customers access to the QuickTime features that allow a user to play back a variety of Internet file formats in the Internet Explorer browser. (Schaaff Depo., p. 116-17)

99. In contrast to the compatibility problems that Apple's QuickTime program has experienced with Microsoft's browser technologies, QuickTime's compatibility history with Netscape's browser has been much smoother. In the mid-1990s, Apple built a QuickTime plug-in for the Netscape Navigator browser. This plug-in was designed to be compatible with Navigator Version 2.0, which was the first version of Netscape's browser that allowed extensibility through plug-ins. Generally, the purpose of the extensibility feature was to enable other developers to extend the functionality of

the browser by creating new and better ways to display the various types of Internet data that the browser was going to access. Because Netscape treats the plug-in as an "open" architecture, Netscape publishes its plug-in interfaces in order to allow this development. This extensibility feature was not built into the first two versions of Microsoft's browser, Internet Explorer 1.0 and Internet Explorer 2.0. (Schaaff Depo., p. 113-14)

100. When Microsoft introduced Internet Explorer 3.0, it touted the ability of its browser to use plug-ins developed for Netscape Navigator. After the introduction of Internet Explorer 3.0, Apple was able to introduce a QuickTime plug-in that was fully compatible with both the Netscape Navigator and Internet Explorer 3.0 browsers. (Schaaff Depo., pp. 114-15) However, with the successive releases of Microsoft's Internet Explorer 4.0, Microsoft Windows 98, and Microsoft multimedia software, Apple has seen a steady degradation of QuickTime's capability to play back a variety of QuickTime-compatible media file formats while operating with Microsoft's Internet Explorer running on the Windows operating system. (Schaaff Depo., p. 116-17)

101. The chart in Attachment 4 illustrates the increasing degradation of QuickTime's performance as Microsoft has introduced greater technical incompatibilities between QuickTime and Microsoft products. The left side of the chart lists various file formats used to store multimedia content. The top of the chart shows various combinations of products used with Windows to display the content in each file format. The boxes in the middle of the chart indicate whether or not QuickTime is allowed to process the designated file format. A green, checked box means that QuickTime is allowed to process the designated format; a red, unchecked box indicates that QuickTime is not afforded a chance to process the file. Because QuickTime has the capability to process all the listed formats, each column should be green absent some interference

from Microsoft's products. The first column contains all green boxes, showing QuickTime's compatibility with Netscape Navigator and Windows 95 for all the file formats. By contrast, the last column indicates that QuickTime is deprived of the opportunity to process all but a few of the file formats when QuickTime is used with Internet Explorer 4.0 and Windows 98.

**THE TECHNICAL PROBLEMS AND MISLEADING ERROR MESSAGES
INTRODUCED BY MICROSOFT IMPAIR QUICKTIME'S PERFORMANCE
AND IMPEDE APPLE'S ABILITY TO COMPETE**

102. With the introduction of Internet Explorer 4.0, Microsoft has manipulated the plug-in architecture of its browser and multimedia software at the point in time that one would expect if those changes were driven for the purposes of market control rather than technical requirements. When Microsoft produced its first plug-in capable browser and needed to compete in the Netscape-dominated market by being technologically compatible, Microsoft used and adhered to Netscape's plug-in architecture. With the growth of Microsoft's browser market share through the bundling of Internet Explorer and Microsoft multimedia software with Windows, Microsoft reduced the compatibility between its browser and the open Netscape standard, starting with the introduction of Internet Explorer 4.0.

The Windows Registry

103. One source of Microsoft's ability to impair QuickTime's capabilities rests in Microsoft's control of the Windows "registry." The registry is a database of information that affects the functionality of the computer's operating system with various types of software. The registry creates an association between a particular file type and a particular application or plug-in so that the computer automatically knows which

application to run whenever the browser is used to open a particular type of file.

(Schaaff Depo., p. 122)

104. Microsoft has used undocumented changes to the Windows registry to impair the ability of QuickTime to play numerous multimedia file types. In some cases, Internet Explorer 4.0 bypasses QuickTime and uses Microsoft software to play a multimedia file from a Web server. For many formats, the Microsoft software is not able to process the file at all. In other cases, the Microsoft software will play the file but with a severely degraded quality. (Schaaff Depo., pp. 122-23, 475-79) This bypassing of QuickTime in preference to Microsoft multimedia software produces the results discussed in paragraph 102 above and illustrated on Attachment 4.

105. In order to overcome these limitations imposed by Microsoft, Apple made a significant effort to effectively reverse engineer the Windows registry software and the Internet Explorer 4.0 registry preferences so that the multimedia file types would be properly associated with the QuickTime plug-in. Apple's efforts to correct these defects achieved only limited success. Thus, Apple was forced to ship a QuickTime product having degraded functionality for the Windows/Internet Explorer 4.0 platform. (Schaaff Depo., pp. 117-18, 123-25); (TX:272-3)

Streaming with Microsoft's Products

106. As discussed above, when Microsoft software bypasses QuickTime for certain files, the user will experience poor multimedia performance. "Streaming" provides an example of this. As noted in paragraph 67 above, streaming refers to the ability to experience a media presentation, view a movie or to listen to an audio clip almost immediately. Without streaming, the consumer would have to wait for the entire file to be downloaded to a local computer before it can be played. This is particularly

important in the multimedia arena since files are typically large in size. (Schaaff Depo., p. 125)

107. QuickTime enables consumers to stream multimedia files from an industry standard HTTP server. By contrast, Microsoft's multimedia player on Internet Explorer 4.0 only supports streaming of data from Microsoft proprietary servers, and only if that data is structured in Microsoft's ASF file format. In contrast, when accessing non-ASF files with the Microsoft browser software, streaming is not employed, which forces the consumer to wait while all of the files are downloaded. Even if the consumer has installed QuickTime 3 with its inherent streaming capabilities, the consumer must download the entire file first since Microsoft associates the file with Microsoft's media player that does not support streaming from non-ASF files. Without streaming, the consumers' audio and video experience of certain multimedia files has been severely degraded. (Schaaff Depo., pp. 123-27, 477)

Misleading Error Messages

108. In the past, Microsoft has caused misleading error messages to appear for consumers who used QuickTime for various file formats. For example, Microsoft bundled with Windows and Internet Explorer a version of Microsoft's multimedia software called ActiveMovie. Under certain conditions, an error dialog message would pop up when the user tried to gain access to types of media files, such as a QuickTime movie file, which were not associated with ActiveMovie. The Windows operating system would then ask the user if he wished to reconfigure his system, suggesting that there was a problem that the consumer should fix although no actual error had occurred. Attachment 5 shows the screen as it would appear to a user. (Schaaff Depo., pp. 127-30)

109. If the user selected "yes" to the query, Windows would reconfigure the system to select Microsoft's ActiveMovie instead of QuickTime -- even though QuickTime was capable of running the movie file. From that point forward, Internet Explorer would launch the ActiveMovie player whenever the consumer clicked on a file containing a QuickTime movie. This could cause problems for certain multimedia files because the ActiveMovie player could only process a subset of the file formats that QuickTime could process. If a file could not be processed by ActiveMovie, an error message would appear telling the user that the player is not available -- even though QuickTime was capable of operating with the file. This could mislead consumers into believing that QuickTime was not operating properly.

110. Microsoft continues to program Windows, Internet Explorer and Microsoft multimedia software in such a way that certain file formats are routed to Microsoft's media player instead of QuickTime. These files include many standard Internet audio file formats that cannot be played by the Microsoft products. For example, when included in certain file formats, Apple's licensed audio codecs, QDesign for music and Qualcomm Purevoice, cannot be played on Microsoft's Media Player. (Schaaff Depo., p. 134) If the user clicks on a QDesign or Qualcomm Purevoice file to play, Internet Explorer 4.0 invokes the Microsoft media player instead of passing the files to QuickTime. Since it cannot decode any of these formats, Microsoft's system will generate an error message to the user. (Schaaff Depo., pp. 123-25, 127-30, 135-36, 477-79)

Microsoft's Response to the Problems

111. Because Apple's past experience with seeking technical assistance from Microsoft was not encouraging, Apple attempted to reverse engineer the technology to

solve the problems. When this effort did not yield good results, we attempted to expedite cooperation with Microsoft by establishing a dialogue at the executive level of both companies.

112. In an effort to enlist further assistance, Mr. Schaaff wrote an e-mail on July 21, 1998 to Microsoft describing some of the problems. According to Mr. Schaaff, when QuickTime was installed by a customer, Internet Explorer 4.0 would not use QuickTime to play multimedia files in spite of Apple's best efforts to solve the problem. (TX:273) Netscape Navigator handled playback through a standard plug-in. However, with Windows 98, Internet Explorer 4.0 and the latest Microsoft multimedia player software, this standard plug-in mechanism seemed to be completely ignored. With the advent of Internet Explorer 4.0, Microsoft software used information from the Windows registry (which is largely undocumented) to determine which software should be invoked to process different multimedia format files on a Web page. Apple's engineers were unable to manipulate the Windows registry to achieve the desired multimedia playback for most file formats. (Id.)

113. Mr. Schaaff asked Microsoft to properly support the standard plug-ins or to inform Apple how to set the registry to achieve the expected playback. (TX:273) Mr. Pierry from Microsoft responded that Apple should be developing a Microsoft ActiveX control. Such a control was not necessary with Internet Explorer 3.0, which supported industry standard plug-ins. ActiveX controls are Microsoft's proprietary format for extending the functionality of the system; ActiveX controls are supported only in Internet Explorer 4.0 and only on the Windows operating system. (Schaaff Depo., pp. 141-43) (TX:272)

114. Mr. Schaaff responded to this e-mail by inquiring whether there was any way to achieve QuickTime playback without rewriting everything as an ActiveX control. Such a rewrite would require that Apple create two separate, distinct QuickTime browser plug-ins for Netscape Navigator and Microsoft Internet Explorer 4.0 since Netscape is not ActiveX compatible. (Schaaff Depo., p. 143) (TX:274) Mr. Schaaff commented that he would at least expect Microsoft to maintain compatibility with existing, widely adopted standards, such as the Netscape plug-in API. (Schaaff Depo. p. 144) (TX:274) Mr. Schaaff received no response from Microsoft to this e-mail. (Schaaff Depo., pp. 145-46)

**ORIGINAL EQUIPMENT MANUFACTURERS AND INDEPENDENT SOFTWARE
VENDORS FEAR REPRISAL FROM MICROSOFT IF THEIR BUSINESS CONDUCT
DOES NOT CONFORM TO MICROSOFT'S WISHES**

115. Despite the overwhelming success Apple has enjoyed in the multimedia market through QuickTime, original equipment manufacturers and independent software vendors who support, or who are considering supporting, QuickTime fear reprisal from Microsoft.

Compaq

116. Before the release of QuickTime 3, Apple considered licensing OEMs to distribute QuickTime with the sale of their computer systems. Compaq Computer Corporation, the largest vendor of personal computers in the world, was bundling the previous version of QuickTime with its computers, and was therefore an obvious OEM candidate to distribute QuickTime 3. (Schiller Depo., p. 23)

117. In fact, Compaq first approached Apple to inquire about licensing opportunities for QuickTime 3. In or about February 1998, Eric Federman, a product manager for the Compaq Presario Division, contacted Phil Schiller, Vice President of